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XRD
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BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT

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Classification (Secret) (Changed to _____)
By Authority of Joint Chiefs of Staff (Action 15 Apr 49)
By *John D. Galt* Date *24 April 51*

OPERATION CROSSROADS.

U.S.S. WAINWRIGHT (DD419).

TEST BAKER [U].

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Director

Defense Atomic Support Agency
Washington, D. C. 20301

of the

ARMED FORCES
SPECIAL WEAPONS PROJECT

(11) 1947,
(12) 38p.

(14) XRD-108

~~OPERATION CROSSROADS~~

~~DIRECTOR OF SHIP MATERIAL~~

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GROUP 3 1 JAN 1965
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Not automatically declassified.

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REG. NO. 3

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F. X. Forest,
Captain, U.S.N.

USS WAINWRIGHT (DD419)

Page 1 of 38 Pages

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1 JAN 1965

TABLE OF CONTENTS

	PAGE NO.
Ship Characteristics Sheet - - - - -	3
Midship Section - - - - -	4
Overall Summary of Damage - - - - -	5
Hull Technical Inspection Report (Section I) - - - - -	12
Machinery Technical Inspection Report (Section II) - - - - -	18
Electrical Technical Inspection Report (Section III) - - - - -	25
Photographic Section (Section IV) - - - - -	32
Commanding Officer's Report (Appendix) - - - - -	35

SECRET

USS WAINWRIGHT (DD419)

U.S.S. WAINWRIGHT (DD419)

SHIP CHARACTERISTICS

Building Yard: Norfolk Naval Shipyard.

Commissioned: 15 April, 1940.

HULL

Length Overall: 348 feet 4 inches.

Length on Waterline: 341 feet 0 inches.

Beam (extreme): 36 feet 0 inches.

Depth (molded at side, to main deck, amidships):
19 feet 7 7/8 inches.

Drafts at time of test: Fwd. 12 feet 6 inches.

Aft. 12 feet 8 inches.

Standard displacement: 1,570 tons.

Displacement at time of test: 2,262 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse turbines are installed, one set per shaft.

Reduction Gears: Two sets of "Falk" double reduction are installed, one per shaft.

Main Condensers: Two are installed in ship.

Boilers: Three Babcock and Wilcox boilers are installed in ship. 565 psi. gauge 715° F.

Propellers: Two are installed in ship.

Main Shafts: Two are installed in ship.

Ships Service Generators: Four sets are installed in ship. Two 150 KW.-A.C. and two 40 KW.-D.C. sets.

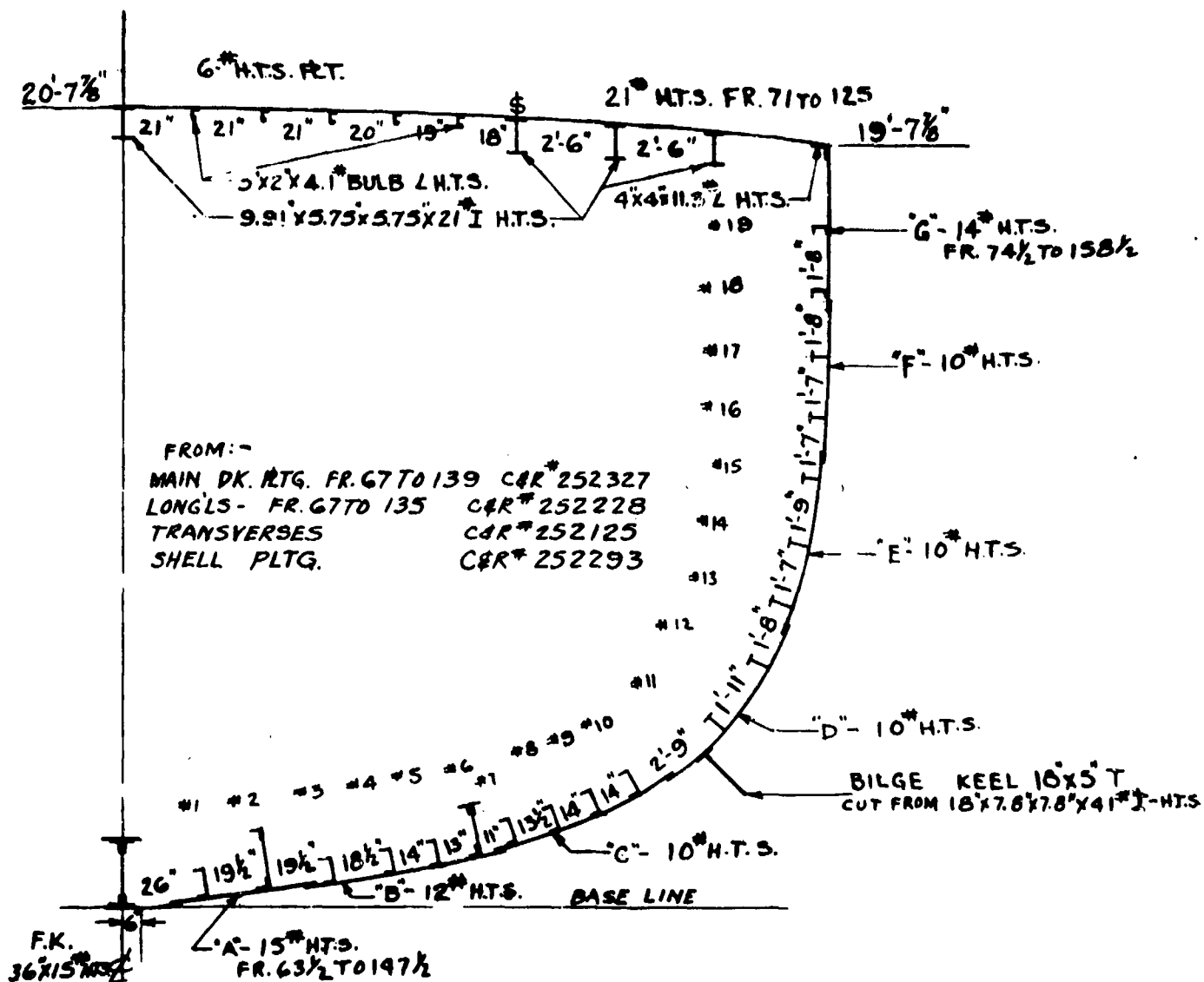
SECRET

USS WAINWRIGHT (DD419)

C.V.K. 21x12 HTS. R
 " F.P. 12x12 HTS. R
 " L's 3x3x6.1 HTS. DBL T&B.
 LONG L 1-9x2 1/2x2 1/2x13.4 E HTS.
 " 2-19 1/2x10 RT. 2 1/2x3x4.5 L's HTS.
 LONG L 3,4,5- 8x2 1/4x2 1/2x11.5 E HTS.
 " 6-16 1/2x10 RT. 3 1/2x4.5 L's HTS.
 " 7-8-9-10- 8x2 1/4x2 1/4x11.5 E HTS.

LONG L 11-12-13-14- 6x3.06x5.87 T HTS.
 " 15-16-17- 5x2.69x4.48 T HTS.
 " 18-19- 5x1 1/4x1 1/4x6.7 E HTS.

7" KEEL BKT. EACH FRAME
 7.65" WEBS SPCD 63"



MIDSHIP SECTION FR98

TEST - B

SCALE 1/4"=1'-0"

SECRET

U.S.S. WAINWRIGHT (DD419)

PAGE 4 OF 38

6873

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition after test.

(a) Drafts after test, general areas of flooding, sources.

HULL

	Draft Forward	Draft Aft	List
Before test	12' - 6"	12' - 8"	2° Stbd.
After test	12' - 6"	12' - 9"	3° Stbd.

The after engine room was flooded to an average depth of about 6 feet above the lower level floor plates. The water entered through the stern tubes, which leaked excessively before Test B.

(b) Structural damage.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

There was no structural damage in way of electrical equipment.

SECRET

USS WAINWRIGHT (DD419)

(c) Other damage.

HULL

No comment.

MACHINERY

None except that incident to flooding.

ELECTRICAL

No damage occurred to electrical equipment due to test.

II. Forces evidenced and effects noted.

(a) Heat.

HULL

No effects.

MACHINERY

No evidence.

ELECTRICAL

No evidence of heat.

(b) Fires and Explosions.

HULL

No evidence.

MACHINERY

No evidence.

SECRET

USS WAINWRIGHT (DD419)

ELECTRICAL

No evidence of fires or explosions.

(c) Shock.

HULL

No effects.

MACHINERY

No evidence.

ELECTRICAL

No evidence of shock.

(d) Pressure.

HULL

No effects.

MACHINERY

No evidence.

ELECTRICAL

No evidence of pressure.

(e) Effects peculiar to the Atomic Bomb.

HULL

None.

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USS WAINWRIGHT (DD419)

MACHINERY

None.

ELECTRICAL

Other than radio activity, no effects peculiar to the Atom Bomb were noted.

III. Results of test on target.

(a) Effect on machinery, electrical, and ship control.

HULL

Not observed.

MACHINERY

A number of electrically driven auxiliaries were made inoperable by the partial flooding of the after engine room. This could have been controlled if the crew had been aboard. The test had no other effect on machinery. A considerable amount of the machinery on this vessel was operated after Test B, and functioned normally.

ELECTRICAL

No damage apparent.

(b) Effect on gunnery and fire control.

HULL

Not observed.

MACHINERY

No comment.

SECRET

USS WAINWRIGHT (DD419)

ELECTRICAL

No damage apparent.

(c) Effect on watertight integrity and stability.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

No electrical damage affected watertight integrity and stability.

(d) Effect on personnel and habitability.

HULL

Personnel and habitability would have been affected by radioactivity.

MACHINERY

None below decks, except radioactivity.

ELECTRICAL

No electrical damage affected personnel or habitability.

(e) Effect on fighting efficiency.

HULL

Except for the effects of radioactivity, fighting efficiency is not affected.

SECRET

USS WAINWRIGHT (DD419)

MACHINERY

None, except for possible effect of radioactivity.

ELECTRICAL

No electrical damage affected the fighting efficiency of the vessel.

IV. General Summary of Observers' Impressions and Conclusions.

HULL

No comment.

MACHINERY

The WAINWRIGHT was outside the range of ship damage from the explosion in Test B.

ELECTRICAL

No damage was evident on any electrical equipment on this vessel. It appears that presently available electrical equipment has sufficient shock resistance to withstand stresses imposed at the distance under conditions existing during test.

V. Preliminary Recommendations.

HULL

None.

MACHINERY

None.

ELECTRICAL

None.

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USS WAINWRIGHT (DD419)

VI. Instructions for loading the vessel specified the following:

HULL

ITEM	LOADING
Fuel oil	50%
Diesel oil	50%
Ammunition	50%
Portable and reserve feed water	As full as practicable
Salt water ballast	160 tons

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with 'Instructions to Target Vessels for Tests and Observations by Ship's Force' issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

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USS WAINWRIGHT (DD419)

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

	Draft Fwd.	Draft Aft.	List
Before test	12'-6"	12'-8"	2° Stbd.
After test	12'-6"	12'-9"	3° Stbd.

The after engine room flooded to a depth of six feet above the lower level floor plates as the result of normal stern tube leakage.

(b) Structural damage.

None.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No effects

(b) Fires and explosions.

No effects.

(c) Shock.

No effects.

SECRET

USS WAINWRIGHT (DD419)

(d) Pressure.

No effects.

(e) Effects apparently peculiar to the atom bomb.

None.

III. Effects of Damage.

(a) Effect on machinery, electrical and ship control.

Not observed.

(b) Effect on gunnery and fire control.

Not observed.

(c) Effect on water-tight integrity and stability.

None.

(d) Effect on personnel and habitability.

Personnel and habitability would have been affected by radioactivity.

(e) Effect on fighting efficiency.

Except for the effects of radioactivity, fighting efficiency is not affected.

IV. General Summary of Observers' Impressions and Conclusions.

No comment.

SECRET

USS WAINWRIGHT (DD419)

V. Preliminary General or Specific Recommendations of Inspection Group.

None.

VI. Instructions for Loading the Vessel Specified the Following:

ITEM	LOADING
Fuel Oil	50%
Diesel Oil	50%
Ammunition	50%
Portable and reserve feed water	As full as practicable
Salt water ballast	160 tons

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

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USS WAINWRIGHT (DD419)

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

No Hull damage resulted from Test B. The after engine room flooded to a depth of two feet above the lower level floor plates as the result of normal stern tube leakage. Photos pages 33 and 34 are general views of the ship after Test B.

B. Superstructure.

No damage.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

No damage.

E. Weather Deck.

No damage - scratch gages installed in eight locations under the weather deck recorded no movement.

F. Exterior Hull.

No damage.

G. Interior Compartments (above w.l.).

No damage.

H. Armor Decks and Miscellaneous Armor.

Not Applicable.

SECRET

USS WAINWRIGHT (DD419)

I. Interior Compartments (below w.l.).

No damage.

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

The after engine room filled to a depth of **six** feet above the lower level floor plates through normal leaking stern tubes. In superstructure spaces some water entered through non-tight openings such as doors due to the use of high pressure fire hoses for washing down the ship in decontamination work. All flooding could have been controlled by ship's force.

M. Ventilation.

No damage.

N. Ship Control.

No damage.

O. Fire Control.

No damage.

P. Ammunition Behavior.

No damage.

Q. Ammunition Handling.

No damage.

SECRET

USS WAINWRIGHT (DD419)

R. Strength.

No damage.

S. Miscellaneous.

No comment.

SECRET

USS WAINWRIGHT (DD419)

Page 17 of 38 Pages

TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

The after engine room was flooded to an average depth of about 6 feet above the lower level floor plates. The water entered through the stern tubes, which leaked excessively before Test B. The flooding is attributed primarily to this condition, although the shock and wave action of Test B may have increased it somewhat. It could have been controlled if the crew had been aboard.

(b) Structural damage.

No comment.

(c) Other damage.

None except that incident to flooding.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and explosions.

No evidence.

(c) Shock.

No evidence.

SECRET

USS WAINWRIGHT (DD419)

(d) Pressure.

No evidence.

(e) Any effects apparently peculiar to the atom bomb.

None.

III. Effects of Damage.

(a) Effect on machinery and ship control.

A number of electrically driven auxiliaries were made inoperable by the partial flooding of the after engine room, which could have been controlled if the crew had been aboard. The test had no other effect on machinery. A considerable amount of the machinery on this vessel was operated after Test B, and functioned normally.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on watertight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

None below decks, except radioactivity.

(e) Total effect on fighting efficiency.

None, except for possible effect of radioactivity.

IV. General Summary of Observers' Impressions and Conclusions.

The WAINWRIGHT was outside the range of physical damage from the explosion in Test B.

V. Preliminary Recommendations.

None.

SECRET

USS WAINWRIGHT (DD419)

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

The after engine room was flooded to 6 1/2 feet above the lower level floor plates at its after end and to 6 feet above the lower level floor plates at its forward end. The flooding resulted from excessive leakage of the stern tube glands during the absence of the crew, and is not believed to have been caused by Test B. This flooding caused the motor on the combined distiller circulating and condensate pumps, the cruising condensate and booster pump and the diesel oil transfer pump to ground out and the units were made inoperable. The lubricating oil of the main fuel pumps and the main condensate and booster pumps were contaminated with water. This secondary damage would not have occurred if the crew had been aboard. Otherwise, the overall condition of the machinery plant was not changed by Test B.

(b) Areas of major damage.

None, except flooding described above.

(c) Primary causes of damage.

There was no primary damage. Secondary damage was incurred due to excessive stern tube leakage. This leakage was not caused by Test B.

(d) Effect of target test on overall operation of machinery plant.

The target test would have had no adverse effect on the operation of the machinery plant, if the crew had been aboard to control the flooding.

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USS WAINWRIGHT (DD419)

B. Boilers.

Undamaged. The condition of the boilers was not affected by Test B. No. 3 boiler has been steamed since Test B. Visual inspection disclosed no damage to boilers 1 and 2 as a result of Test B.

C. Blowers, Forced Draft.

Undamaged. No. 5 and 6 forced draft blowers have been operated at normal speed and pressure since Test B. The remaining blowers have been visually inspected and turned by hand and have suffered no apparent damage.

D. Fuel Oil Equipment.

Undamaged. All fuel oil equipment in No. 2 fire-room has been operated at normal working conditions since Test B. The remaining equipment was inspected visually and is apparently undamaged.

E. Boiler Feedwater Equipment.

Undamaged. Some of the equipment has been used in normal operation ever since Test B, incident to steaming No. 3 boiler. The other equipment has been inspected visually and shows no sign of damage.

F. Main Engines.

The main engines sustained no apparent damage as a result of Test B.

G. Reduction Gears.

Undamaged. Both reduction gears were inspected while being jacked over. The lubrication system operated normally. No damage to the gears was noted.

H. Shafting and Bearings.

SECRET

USS WAINWRIGHT (DD419)

The shafting and bearings sustained no apparent damage as a result of Test B.

I. Lubrication System.

The lubrication system sustained no damage as a result of Test B. The system has been operated.

J. Condensers and Air Ejectors.

The condensers and air ejectors sustained no apparent damage as a result of Test B.

K. Pumps.

All pumps that were operable before Test B have been operated since Test B, with the following exceptions:

1. Diesel oil transfer pumps.
2. Fog oil pumps.
3. Cruising condensate and booster pumps.
4. Fuel oil tank drain pumps.
5. No. 2 fire and flushing pumps.
6. Distiller circulating and condensate pumps.

The motors on the above listed pumps were shorted out due to flooding of No. 2 engine room. This flooding is not believed to have been caused by Test B.

L. Auxiliary Generators (Turbine and Gears).

The auxiliary generators sustained no apparent damage as a result of Test B.

M. Propellers.

The propellers sustained no apparent damage as a result of Test B.

N. Distilling Plant.

SECRET

USS WAINWRIGHT (DD419)

The distilling plant sustained no apparent damage as a result of Test B.

O. Refrigerating Plant.

The refrigerating plant sustained no damage as a result of Test B.

P. Winches, Windlasses, and Capstans.

The anchor windlass and deck winch sustained no apparent damage as a result of Test B.

Q. Steering Engine.

The steering engine sustained no apparent damage as a result of Test B.

R. Elevators, Ammunition Hoists, Etc.

The ammunition hoists sustained no apparent damage as a result of Test B.

S. Ventilation (Machinery).

The ventilation machinery sustained no apparent damage as a result of Test B.

T. Air Compressors.

The air compressors sustained no apparent damage as a result of Test B.

U. Diesels (Generators and Boats).

Undamaged. The diesel generator was operated under load after Test B.

V. Piping.

The piping sustained no damage, insofar as could be determined by visual inspection.

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USS WAINWRIGHT (DD419)

W. Miscellaneous.

(a) Messing equipment.

Undamaged.

(b) Laundry equipment.

Undamaged

(c) Machine shop equipment.

Undamaged.

SECRET

USS WAINWRIGHT (DD419)

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

1. Drafts were essentially the same as before the test.
2. Slight flooding occurred in the engine room.
3. Source of leaks apparently was through stern tubes.

(b) Structural damage.

There was no structural damage in way of electrical equipment.

(c) Other damage.

No damage occurred to electrical equipment due to Test B.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence of heat.

(b) Fires and explosions.

No evidence of fires or explosions.

(c) Shock.

No evidence of shock.

SECRET

USS WAINWRIGHT (DD419)

(d) Pressure.

No evidence of pressure.

(e) Any effects apparently peculiar to the atom bomb.

Other than radioactivity, no effects peculiar to the atom bomb were noted.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

No damage apparent.

(b) Effect on gunnery and fire control.

No damage apparent.

(c) Effect on water-tight integrity and stability.

No electrical damage affected water-tight integrity and stability.

(d) Effect on personnel and habitability.

No electrical damage affected personnel or habitability.

(e) Total effect on fighting efficiency.

No electrical damage affected the fighting efficiency of the vessel.

IV. General Summary of Observers' Impressions and Conclusions.

No damage was evident on any electrical equipment on this vessel. It appears that presently available electrical

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USS WAINWRIGHT (DD419)

equipment has sufficient shock resistance to withstand stresses imposed at this distance under conditions existing during Test B.

V. Any Preliminary General or Specific Recommendations of the Inspecting Group.

None.

SECRET

USS WAINWRIGHT (DD419)

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

The overall condition of the electric plant is the same as before the test.

(b) Areas of major damage.

None.

(c) Primary causes of damage in each area of major damage.

None.

(d) Effect of target test on overall operation of electric plant.

1. Ship's service generator plant - no effect.
2. Engine and boiler auxiliaries - no effect.
3. Electric propulsion - not applicable.
4. Communications - no effect.
5. Fire control circuits - no effect.
6. Ventilation - no effect.
7. Lighting - no effect.

(e) Types of equipment most affected.

None.

B. Electric Propulsion Rotating Equipment.

Not Applicable.

SECRET

USS WAINWRIGHT (DD419)

C. Electric Propulsion Control Equipment.

Not Applicable.

D. Generators - Ships Service.

No damage.

E. Generators - Emergency.

No damage. Verbal information from the C.O. to the staff electrical inspector indicated that the diesel generator set operated successfully during Test "B".

F. Switchboards, Distribution and Transfer Panels.

No damage.

G. Wiring, Wiring Equipment and Wireways.

No damage.

H. Transformers.

No damage.

I. Submarine Propelling Batteries.

Not Applicable.

J. Portable Batteries.

No damage.

K. Motors, Motor Generator Sets and Motor Controllers.

No damage.

SECRET

USS WAINWRIGHT (DD419)

L. Lighting Equipment.

No damage.

M. Searchlights.

No damage.

N. Degaussing Equipment.

No damage.

O. Gyro Compass Equipment.

No damage.

P. Sound Powered Telephones.

No damage.

Q. Ship's Service Telephones.

Not Applicable.

R. Announcing Systems.

No damage.

S. Telegraphs.

No damage.

T. Indicating Systems.

No damage.

U. I.C. and A.C.O. Switchboards.

No damage.

SECRET

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V. F.C. Switchboard.

No damage.

W. Miscellaneous.

No comment.

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USS WAINWRIGHT (DD419)

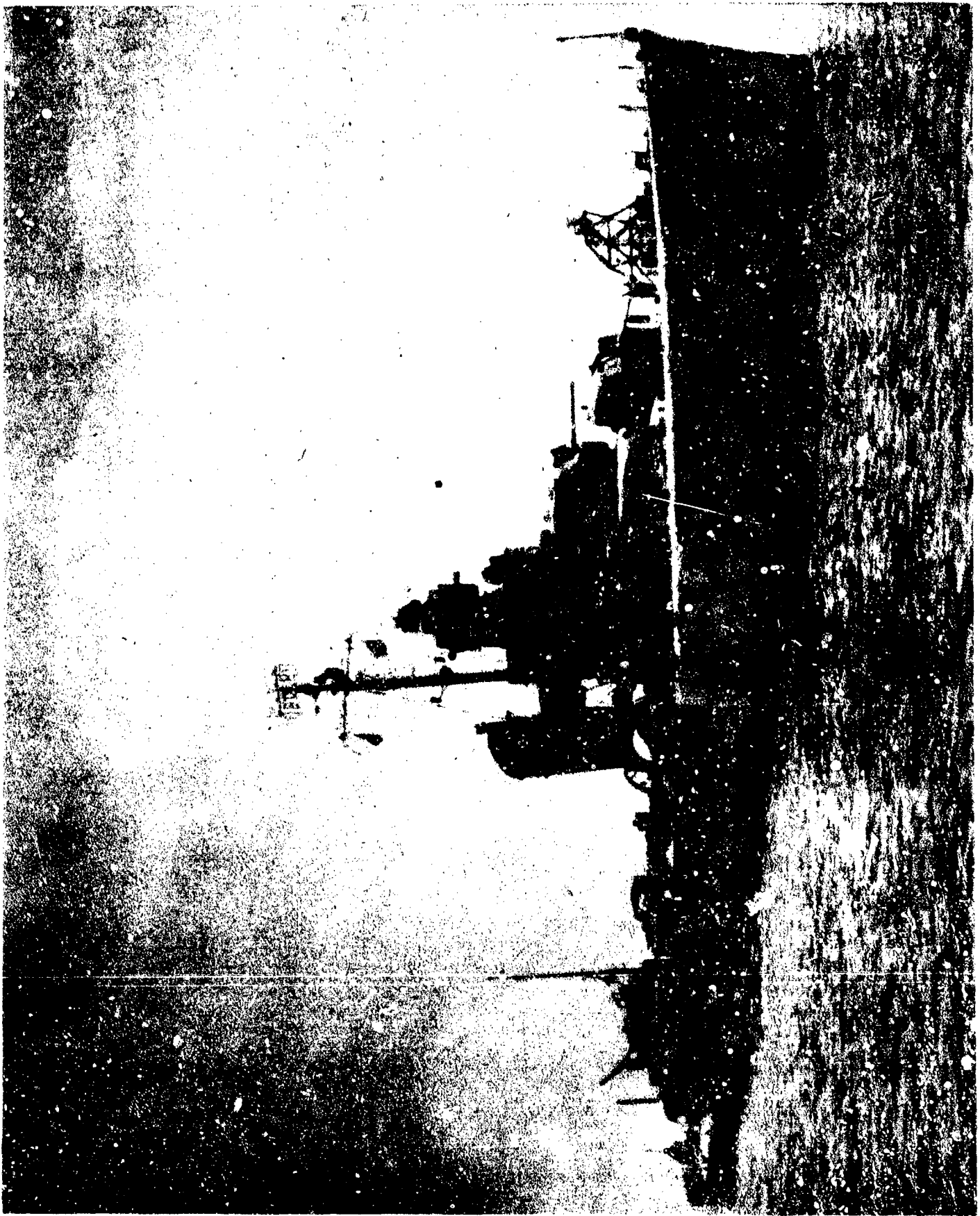
SECTION IV

PHOTOGRAPHS

TEST BAKER

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USS WAINWRIGHT (DD419)



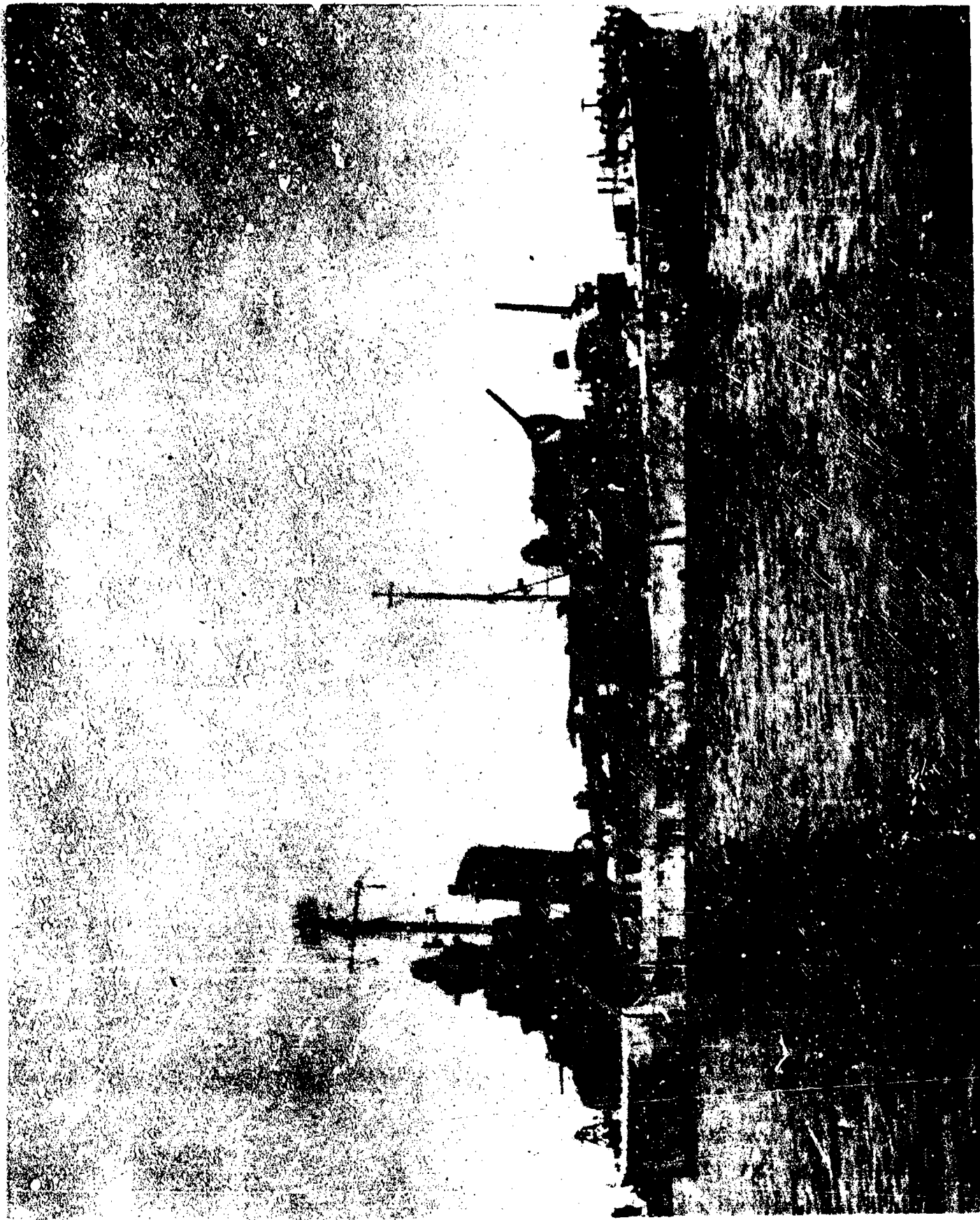
AB-CR-227-283-72. Starboard bow after Test B.

SECRET

USS WAINWRIGHT (DD419)

Page 33 of 38 Pages

6873



AB-CR-227-283-76. Port quarter after Test B.

SECRET

USS WAINWRIGHT (DD419)

Page 34 of 38 Pages

6873

APPENDIX

COMMANDING OFFICER'S REPORT

TEST BAKER

SECRET.

USS WAINWRIGHT (DD419)

REPORT #11
COMMANDING OFFICERS REPORT
SECTION 1

U.S.S. WAINWRIGHT (DD419) SIMS Class Berth 124

The material condition of the ship and its equipment was routine.

SECRET

U.S.S. WAINWRIGHT (DD419)

SECTION II

No damage was suffered by this vessel as a result of test Baker.

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U.S.S. WAINWRIGHT (DD419)

Page 37 of 38 Pages

SECTION III

No comment. (Radiological factors not considered.)

NOTE: B-4-1 (After Engine Room) was flooded by August 1st to a depth of about six feet. This was caused by progressive flooding due to leaking port and starboard stern tubes and the resultant damage was not a result of the detonation, the leaks being in effect prior to BAKER day.

SECRET

U.S.S. WAINWRIGHT (DD419)

AT 12
Page 38 of 38 Pages



Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

18 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush (Security)

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency has declassified the following reports:

✓AD-366588✕	XRD-203-Section 12✓
AD-366589✓	XRD-200-Section 9
AD-366590✓	XRD-204-Section 13
AD-366591✓	XRD-183
✓AD-366586✕	XRD-201-Section 10✓
✓AD-367487✕	XRD-131-Volume 2✓
✓AD-367516✕	XRD- 3 143✓
✓AD-367493✕	XRD-142✓
AD-801410L✓	XRD-138
AD-376831L✓	XRD-83
AD-366759✓	XRD-80
✓AD-376830L✕	XRD-79✓
✓AD-376828L✕	XRD-76✓
✓AD-367464✕	XRD-106✓
AD-801404L✓	XRD-105-Volume 1
✓AD-367459✕	XRD-100✓

TRC

18 April 1997

Subject: Declassification of Reports

✓AD-367491 ✕	XRD-134-Volume 2 ✓
✓AD-367479 ✕	XRD-123 ✓
✓AD-367478 ✕	XRD-122 ✓
✓AD-367481 ✕	XRD-125 ✓
AD-367500 ✓	XRD-159-Volume 2 <i>reinst</i>
✓AD-367499 ✕	XRD-160-Volume 3 ✓
✓AD-367498 ✕	XRD-161-Volume 4 ✓
AD-367512 ✓	XRD-147
AD-367511 ✓	XRD-148
✓AD-367465 ✕	XRD-107 ✓
AD-366733 ✓	XRD-43
✓AD-367477 ✕	XRD-121 ✓
✓AD-367476 ✕	XRD-120 ✓
✓AD-367467 ✕	XRD-109-Volume 1 ✓
✓AD-367475 ✕	XRD-119 ✓
✓AD-367474 ✕	XRD-118 ✓
✓AD-367473 ✕	XRD-117 ✓
✓AD-367472 ✕	XRD-116 ✓
✓AD-367471 ✕	XRD-115 ✓
AD-367466 ✕	XRD-108 ✓
AD-801405L ✓	XRD-113
AD-367470 ✕	XRD-112 ✓
AD-367469 ✕	XRD-111 ✓

TRC

18 April 1997

Subject: Declassification of Reports

AD-801406L ✓ XRD-114.

In addition, all of the cited reports are now **approved for public release; distribution statement "A" now applies.**

Arldith Jarrett
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